BENZTROPINE MESYLATE - benztropine mesylate injection, solution
American Regent, Inc.

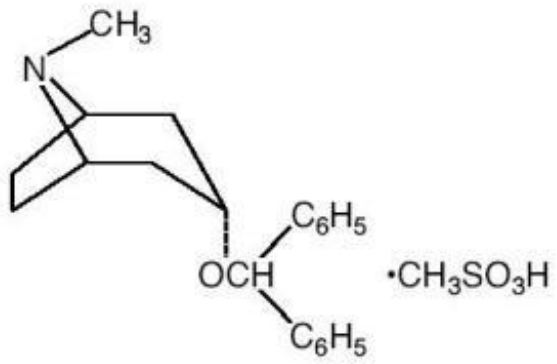
Benztropine Mesylate Injection, USP

Rx Only

DESCRIPTION

Benztropine mesylate is a synthetic compound containing structural features found in atropine and diphenhydramine.

It is designated chemically as 8-azabicyclo[3.2.1] octane, 3-(diphenylmethoxy)-, *endo*, methanesulfonate. Its empirical formula is $C_{21}H_{25}NO \cdot CH_4O_3S$, and its structural formula is:



Benztropine mesylate is a crystalline white powder, very soluble in water, and has a molecular weight of 403.54.

Benztropine Mesylate Injection, USP is supplied as a sterile injection for intravenous and intramuscular use. Each milliliter of the injection contains:

Benztropine Mesylate: …….1 mg

Sodium Chloride: ……9 mg

Water for Injection q.s.: ……1 mL

CLINICAL PHARMACOLOGY

Benztropine mesylate injection possesses both anticholinergic and antihistaminic effects, although only the former have been established as therapeutically significant in the management of parkinsonism. In the isolated guinea pig ileum, the anticholinergic activity of this drug is about equal to that of atropine; however, when administered orally to unanesthetized cats, it is only about half as active as atropine. In laboratory animals, its antihistaminic activity and duration of action approach those of pyrilamine maleate.

INDICATIONS AND USAGE

For use as an adjunct in the therapy of all forms of parkinsonism.

Useful also in the control of extrapyramidal disorders (except tardive dyskinesia — see PRECAUTIONS) due to neuroleptic drugs (e.g., phenothiazines).

CONTRAINDICATIONS

Hypersensitivity to any component of benztropine mesylate injection.

Because of its atropine-like side effects, this drug is contraindicated in pediatric patients under three years of age, and should be used with caution in older pediatric patients.

WARNINGS

Safe use in pregnancy has not been established.

Benztropine mesylate injection may impair mental and/or physical abilities required for performance of hazardous tasks, such as operating machinery or driving a motor vehicle.

When benztropine mesylate injection is given concomitantly with phenothiazines, haloperidol, or other drugs with anticholinergic or anti-dopaminergic activity, patients should be advised to report gastrointestinal complaints, fever or heat intolerance promptly. Paralytic ileus, hyperthermia and heat stroke, all of which have sometimes been fatal, have occurred in patients taking anticholinergic-type antiparkinsonism drugs, including benztropine mesylate injection, in combination with phenothiazines and/or tricyclic antidepressants.

Since benztropine mesylate injection contains structural features of atropine, it may produce anhidrosis. For this reason, it should be administered with caution during hot weather, especially when given concomitantly with other atropine-like drugs to the chronically ill, the alcoholic, those who have central nervous system disease, and those who do manual labor in a hot environment. Anhidrosis may occur more readily when some disturbance of sweating already exists. If there is evidence of anhidrosis, the possibility of hyperthermia should be considered. Dosage should be decreased at the discretion of the physician so that the ability to maintain body heat equilibrium by perspiration is not impaired. Severe anhidrosis and fatal hyperthermia have occurred.

PRECAUTIONS

General

Since benztropine mesylate injection has cumulative action, continued supervision is advisable. Patients with a tendency to tachycardia and patients with prostatic hypertrophy should be observed closely during treatment.

Dysuria may occur, but rarely becomes a problem. Urinary retention has been reported with benztropine mesylate injection.

The drug may cause complaints of weakness and inability to move particular muscle groups, especially in large doses. For example, if the neck has been rigid and suddenly relaxes, it may feel weak, causing some concern. In this event, dosage adjustment is required.

Mental confusion and excitement may occur with large doses, or in susceptible patients. Visual hallucinations have been reported occasionally. Furthermore, in the treatment of extrapyramidal disorders due to neuroleptic drugs (e.g., phenothiazines), in patients with mental disorders, occasionally there may be intensification of mental symptoms. In such cases, antiparkinsonian drugs can precipitate a toxic psychosis. Patients with mental disorders should be kept under careful observation, especially at the beginning of treatment or if dosage is increased.

Tardive dyskinesia may appear in some patients on long-term therapy with phenothiazines and related agents, or may occur after therapy with these drugs have been discontinued. Antiparkinsonism agents do

not alleviate the symptoms of tardive dyskinesia, and in some instances may aggravate them. Benztropine mesylate injection is not recommended for use in patients with tardive dyskinesia.

The physician should be aware of the possible occurrence of glaucoma. Although the drug does not appear to have any adverse effect on simple glaucoma, it probably should not be used in angle-closure glaucoma.

Drug Interactions

Antipsychotic drugs such as phenothiazines or haloperidol; tricyclic antidepressants (see WARNINGS).

Pediatric Use

Because of the atropine-like side effects, benztropine mesylate injection should be used with caution in pediatric patients over three years of age (see CONTRAINDICATIONS).

ADVERSE REACTIONS

The adverse reactions below, most of which are anticholinergic in nature, have been reported and within each category are listed in order of decreasing severity.

Cardiovascular

Tachycardia.

Digestive

Paralytic ileus, constipation, vomiting, nausea, dry mouth. If dry mouth is so severe that there is difficulty in swallowing or speaking, or loss of appetite and weight, reduce dosage, or discontinue the drug temporarily.

Slight reduction in dosage may control nausea and still give sufficient relief of symptoms. Vomiting may be controlled by temporary discontinuation, followed by resumption at a lower dosage.

Nervous System

Toxic psychosis, including confusion, disorientation, memory impairment, visual hallucinations; exacerbation of pre-existing psychotic symptoms; nervousness; depression; listlessness; numbness of fingers.

Special Senses

Blurred vision, dilated pupils.

Urogenital

Urinary retention, dysuria.

Metabolic/Immune or Skin

Occasionally, an allergic reaction, e.g., skin rash, develops. If this cannot be controlled by dosage reduction, the medication should be discontinued.

Other

Heat stroke, hyperthermia, fever.

To report SUSPECTED ADVERSE REACTIONS, contact American Regent, Inc. at 1-800-734-9326 or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

OVERDOSAGE

Manifestations

May be any of those seen in atropine poisoning or antihistamine overdosage: CNS depression, preceded or followed by stimulation; confusion; nervousness; listlessness; intensification of mental symptoms or toxic psychosis in patients with mental illness being treated with neuroleptic drugs (e.g., phenothiazines); hallucinations (especially visual); dizziness; muscle weakness; ataxia; dry mouth; mydriasis; blurred vision; palpitations; tachycardia; elevated blood pressure; nausea; vomiting; dysuria; numbness of fingers; dysphagia; allergic reactions, e.g., skin rash; headache; hot, dry, flushed skin; delirium; coma; shock; convulsions; respiratory arrest; anhidrosis; hyperthermia; glaucoma; constipation.

Treatment

Physostigmine salicylate, 1 to 2 mg, SC or IV, reportedly will reverse symptoms of anticholinergic intoxication[1]. A second injection may be given after 2 hours if required. Otherwise treatment is symptomatic and supportive. Induce emesis or perform gastric lavage (contraindicated in precomatose, convulsive, or psychotic states). Maintain respiration. A short-acting barbiturate may be used for CNS excitement, but with caution to avoid subsequent depression; supportive care for depression (avoid convulsant stimulants such as picrotoxin, pentylenetetrazol, or bemegride); artificial respiration for severe respiratory depression; a local miotic for mydriasis and cycloplegia; ice bags or other cold applications and alcohol sponges for hyperpyrexia, a vasopressor and fluids for circulatory collapse. Darken room for photophobia.

DOSAGE AND ADMINISTRATION

Since there is no significant difference in onset of effect after intravenous or intramuscular injection, usually there is no need to use the intravenous route. The drug is quickly effective after either route, with improvement sometimes noticeable a few minutes after injection. In emergency situations, when the condition of the patient is alarming, 1 to 2 mL of the injection normally will provide quick relief. If the parkinsonian effect begins to return, the dose can be repeated.

Because of cumulative action, therapy should be initiated with a low dose which is increased gradually at five or six-day intervals to the smallest amount necessary for optimal relief. Increases should be made in increments of 0.5 mg, to a maximum of 6 mg, or until optimal results are obtained without excessive adverse reactions.

Postencephalitic and Idiopathic Parkinsonism

The usual daily dose is 1 to 2 mg, with a range of 0.5 to 6 mg parenterally.

As with any agent used in parkinsonism, dosage must be individualized according to age and weight, and the type of parkinsonism being treated. Generally, older patients, and thin patients cannot tolerate large doses. Most patients with postencephalitic parkinsonism need fairly large doses and tolerate them well. Patients with a poor mental outlook are usually poor candidates for therapy.

In idiopathic parkinsonism, therapy may be initiated with a single daily dose of 0.5 to 1 mg at bedtime. In some patients, this will be adequate; in others 4 to 6 mg a day may be required.

In postencephalitic parkinsonism, therapy may be initiated in most patients with 2 mg a day in one or more doses. In highly sensitive patients, therapy may be initiated with 0.5 mg at bedtime, and increased as necessary.

Some patients experience greatest relief when given the entire dose at bedtime; others react more favorably to divided doses, two to four times a day. Frequently, one dose a day is sufficient, and divided doses may be unnecessary or undesirable.

The long duration of action of this drug makes it particularly suitable for bedtime medication when its effects may last throughout the night, enabling patients to turn in bed during the night more easily, and to rise in the morning.

When benztropine mesylate injection is started, do not terminate therapy with other antiparkinsonian agents abruptly. If the other agents are to be reduced or discontinued, it must be done gradually. Many patients obtain greatest relief with combination therapy.

Benztropine mesylate injection may be used concomitantly with carbidopa-levodopa, or with levodopa, in which case periodic dosage adjustment may be required in order to maintain optimum response.

Drug-Induced Extrapyramidal Disorders

In treating extrapyramidal disorders due to neuroleptic drugs (e.g., phenothiazines), the recommended dosage is 1 to 4 mg once or twice a day parenterally. Dosage must be individualized according to the need of the patient. Some patients require more than recommended; others do not need as much.

In acute dystonic reactions, 1 to 2 mL of the injection usually relieves the condition quickly.

When extrapyramidal disorders develop soon after initiation of treatment with neuroleptic drugs (e.g., phenothiazines), they are likely to be transient. One to 2 mg of benztropine mesylate injection two or three times a day usually provides relief within one or two days. After one or two weeks, the drug should be withdrawn to determine the continued need for it. If such disorders recur, benztropine mesylate injection can be reinstituted. Certain drug-induced extrapyramidal disorders that develop slowly may not respond to benztropine mesylate injection.

Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration.

HOW SUPPLIED

Benztropine Mesylate Injection, USP 1 mg per mL, is a clear, colorless solution and is supplied in boxes of 5 x 2 mL vials.

NDC 0517-0785-05.

Recommended Storage: Store at 20° to 25°C (68° to 77°F) [see USP Controlled Room Temperature].

[1]Duvoisin, R.C.; Katz, R.J.; Amer. Med. Ass. 206:1963-1965, Nov. 25, 1968.

AMERICAN
REGENT, INC.
SHIRLEY, NY 11967

Revised: December 2009

PACKAGE LABEL.PRINCIPAL DISPLAY PANEL

PRINCIPAL DISPLAY PANEL - 2 mL Label

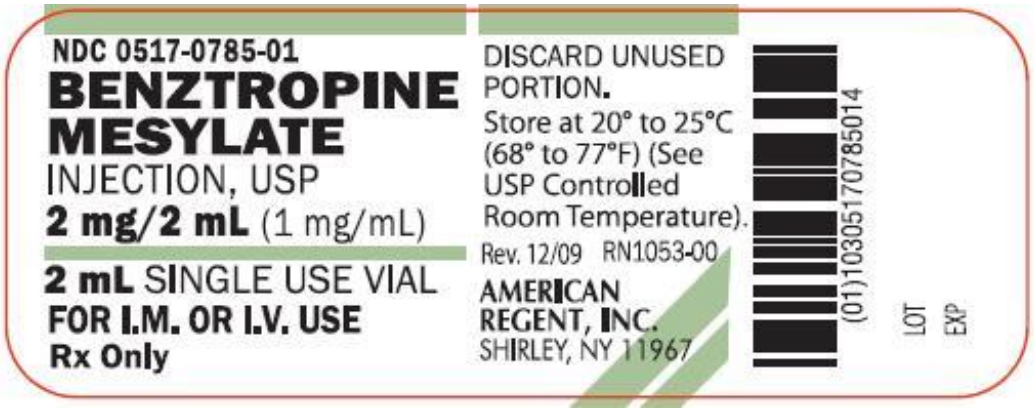
NDC 0517-0785-01

BENZTROPINE
MESYLATE
INJECTION, USP
2 mg/2 mL (1 mg/mL)

2 mL SINGLE USE VIAL

FOR I.M. OR I.V. USE

Rx Only



PRINCIPAL DISPLAY PANEL - 2 mL Carton

NDC 0517-0785-05

5 x 2 mL

SINGLE USE VIALS

BENZTROPINE MESYLATE
INJECTION, USP
2 mg/2 mL (1 mg/mL)
FOR INTRAMUSCULAR OR INTRAVENOUS USE

Rx Only

AMERICAN REGENT, INC.
SHIRLEY, NY 11967

BENZTROPINE MESYLATE

benztropine mesylate injection, solution

Product Information			
			NDC 0517

Product Type	HUMAN PRESCRIPTION DRUG	**Item Code (Source)**	NDC:0517-0785
Route of Administration	INTRAMUSCULAR, INTRAVENOUS	**DEA Schedule**	

Active Ingredient/Active Moiety

Ingredient Name	Basis of Strength	Strength
BENZTROPINE MESYLATE (UNII: WMJ8TL7510) (BENZTROPINE - UNII:1NHL2J4X8K)	BENZTROPINE MESYLATE	1 mg in 1 mL

Inactive Ingredients

Ingredient Name	Strength
SODIUM CHLORIDE (UNII: 451W47IQ8X)	9 mg in 1 mL
WATER (UNII: 059QF0KO0R)	

Packaging

#	Item Code	Package Description	Marketing Start Date	Marketing End Date
1	NDC:0517-0785-05	5 in 1 CARTON		
1	NDC:0517-0785-01	2 mL in 1 VIAL, SINGLE-USE		

Marketing Information

Marketing Category	Application Number or Monograph Citation	Marketing Start Date	Marketing End Date
ANDA	ANDA091152	02/04/2011	

Labeler - American Regent, Inc. (622781813)

Revised: 5/2011 American Regent, Inc.